

## REMARKS

Upon entry of this Amendment, claims 1-74 will be pending in the application.

Claims 13-38 have been withdrawn.

Applicant has amended claims 1-12 to recite that a current density of at least 100mA/cm<sup>2</sup> is applied to the ionic solution. This amendment is supported throughout the original disclosure, including at page 21, lines 5-26. Other amendments to claims 1-12 have been presented for the purpose of clarification, and more particularly to remove pronouns from the claims, correct Markush language, and recite inherent features (i.e., “inside the lattice”). For example, the term “vibrating” and other conjugations of this verb, as added herein to the currently amended claims, refer to vibrations produced in the solid by the release of energy from molecular hydrogen formation.

These amendments are not intended to limit or otherwise affect the scope of the claims, and have not been presented in response to any of the active rejections. The subject matter of new claims 39, 42, 45, 48, 51, 54, 57, 60, 63, 66, 69, and 72 is supported throughout the original disclosure. The subject matter of new claims 40, 43, 46, 49, 52, 55, 58, 61, 64, 67, 70, and 73 is supported at, for example, page 2, lines 2-8. The subject matter of new claims 41, 44, 47, 50, 53, 56, 59, 62, 65, 68, 71, and 74 is supported at, for example, page 15, line 26 to page 17, line 2. Accordingly, approval and entry of the foregoing amendments and new claims are respectfully requested.

### ***SPECIFICATION: 35 U.S.C. § 112, FIRST PARAGRAPH***

The specification has been objected to under 35 U.S.C. § 112, first paragraph, as failing to provide an adequate written description of the invention and as failing to enable the invention.

Applicant respectfully traverses this rejection.

Case law provides that a specification that discloses how to make and use an invention in terms that correspond in scope to those used in claiming the subject matter sought to be patented must be taken as in compliance with the enabling requirement of the first paragraph of 35 U.S.C. §112 unless there is reason to doubt the objective truth of the statements contained therein and relied on for enabling support. It is incumbent on the Patent Office, whenever a rejection on this basis is made, to explain why it doubts the truth or accuracy of any statement in a supporting disclosure and to back up assertions of its own with acceptable evidence or reasoning that is inconsistent with the contested statement. *In re Marzocchi*, 169 USPQ 367 (CCPA 1971).

The Examiner has attempted to raise doubt with respect to the objective truth of statements contained in the subject application by equating the invention to cold fusion, as disclosed by Pons and Fleischmann (hereinafter "Pons et al."). According to the Examiner, the cold fusion work of Pons et al. has been discredited, for example, as reported in the New York Times and Washington Post.

Applicant respectfully submits and maintains that the Examiner's comparison of the claimed invention to Pons et al. is inappropriate. Applicant's invention, as described in the specification and claimed, relates to a method and apparatus for the creation and use of stable plasma inside of a solid, wherein the plasma comprises protons, deuterons, and/or tritons. The plasma is created from a source of particles selected from an ionic solution having a pH less than 1.0, plasma gas, and/or gas atmosphere. The requirement that the ionic solution have a pH less than 1.0 is a fundamental condition necessary to the formation of sufficient plasma inside the lattice of the cathode.

In contrast, the Pons et al. concept relied upon the incorporation of deuterium atoms and molecules inside the metal lattice to form PdH. The solution in which the Pons et al.

process is carried out does not have a pH less than 1. As verified by factual evidence disclosed in the subject application and discussed in detail below, the atoms and molecules of Pons et al. are not converted into or maintained in a plasma form inside the metal lattice.

Accordingly, Applicant's claimed invention differs from that of Pons et al. Applicant respectfully submits that the evidence and reasoning submitted by the Examiner in support of this objection have been rebutted. The Pons et al. publication does not raise any issues that provide reasonable reasons to doubt the adequacy of the specification under Section 112. Accordingly, the written description and enabling disclosure of the subject patent application must be taken as in compliance with the enabling requirement of the first paragraph of 35 U.S.C. §112 (absent convincing evidence to the contrary), and this rejection should be withdrawn.

The Examiner has attempted to trivialize this distinction on several grounds, which are addressed in order below. The evidence of record supports none of the Examiner's allegations.

**First**, the Examiner alleges that Applicant's contentions are not based on facts:

Applicants [*sic*] arguments appear based on his "belief" or "desire" or "contention", that hydrogen isotopes will exist inside his cathode as nuclei (i.e. protons, deuterons, or tritons) and, that hydrogen isotopes exist in the prior art such as that of Pons et al or Williams et al, only as atoms or molecules.

However, as previously pointed out by the Examiner, applicant has presented no factual evidence to support his "belief", or "desire" or "contention".

Applicant respectfully disagrees. The Examiner's attention is directed to page 9, line 14 to page 11, line 3, which provide factual evidence to support Applicant's position. The present inventive concept of the formation of plasma inside palladium is based on and builds upon the experiments performed by Clamroth and Knorr, and Schuldiner and Hare. These experiments are summarized in Figures 5a and 5b of the application. The Figures show the potential V of the palladium as a function of the logarithm of the current density during the

production of hydrogen. For the more acidic solutions (below pH of 1) and high current densities (greater than  $100 \text{ mA/cm}^2$ ), the potential is independent of current density, as manifested by the nil slope for pH of 0.40 at current densities greater than  $100 \text{ mA/cm}^2$ . The significance of this finding is explained as follows. In any electrochemical mechanism, it is impossible to produce hydrogen molecules with a slope ( $b=0$ ), unless the electrochemical mechanism is masked by a new phenomenon. This phenomenon is the accumulation of plasma ( $\text{H}^+ + \text{e}^- \rightarrow \text{plasma}$ ) inside the lattice. The particles remain inside the cathode without reacting. This explains why the slope is nil. The formation of plasma is the prevalent phenomenon occurring that explains why the slope is nil ( $b=0$ ). These experiments have been performed successfully and documented. The experiments and inventor's findings and conclusions are based neither on assumption nor on speculation. Rather, they are based on real-life experiments that have been successfully and reproducibly performed.

Applicant respectfully submits that the Examiner has not asserted any cogent reasons to discredit the findings and conclusions reported in the specification. In the event the Examiner maintains this ground of rejection, Applicant respectfully submits that the Examiner provide an explanation of what phenomenon, other than the generation of plasma, explains the zero slope reported in Figure 5a.

Additionally, other experiments also prove the presence of plasma inside the cathode. For example, the application of a large cathodic current-density to a palladium cathode in an acidic solution ( $\text{pH} < 1$ ) for several hours allows the formation of PdH and the accumulation of plasma. When the current is interrupted, the palladium still contains both PdH and plasma. Measuring the potential of the palladium cathode and comparing it to that of a platinum electrode acting as reference after the current is interrupted shows two phases:

-First phase: The potential remains positive for several hours. Slowly the hydrogen atoms disappear from inside the metal. The potential decreases.

-Second phase: The potential becomes negative because of the presence of the particles  $H^+$ ,  $D^+$  and  $T^+$  inside the metal. When there is no plasma the potential remains positive.

The presence of plasma is explained in detail on page 11, lines 3 to 37 of the present specification. Again, these experiments have been performed successfully and documented. They are based neither on assumption nor on speculation. Rather, they are based on real-life experiments that have been successfully and reproducibly performed.

Accordingly, Applicant has clearly presented reputable factual evidence supporting his description in the present application of the formation of plasma in a solid, the ability to manipulate the plasma, and the utilization of the plasma in the manners set forth in the specification. In the event that the Examiner maintains his position that no factual evidence has been present, Applicant respectfully requests that the Examiner explain fully in the next written communication why the offered evidence is not persuasive, e.g., the Examiner is asked to provide an alternative explanation for the phenomenon.

**Second**, the Examiner alleges that Pons et al. discloses the formation of nuclei in the metal lattice:

The examiner (see for example, pages 5 and 6 of the 2/24/03 Office action) had directed applicants [*sic*] attention to specific portions of Pons et al which stated that the isotopic hydrogen inside the metal lattice of the cathode was in the form of nuclei (i.e. protons, deuterons and tritons) (nuclei are not atoms) and, that the isotopic hydrogen in the metal lattic (cathode) exist predominantly as freely, highly mobile nuclei.

In response, applicant alleges that these statements in Pons et al are false (see for example page 27 of the 8/28/03 response).

However, applicant has presented no factual evidence whatsoever to support his unfounded allegations that such statements in Pons et al are false.

\* \* \*

Applicant still has not presented any reputable factual evidence showing why or how and in what manner, isotopic hydrogen can exist inside his cathode as nuclei (plasma) but, in such prior art systems of Pons et al, the isotopic hydrogen can allegedly only exist as atoms (despite the specific statements in Pons et al to the contrary).

Applicant respectfully disagrees. Pons et al. repeatedly refers to the incorporation of “isotopic hydrogen atoms” in the lattice. See page 6 (“migration of isotopic hydrogen atoms

in the metal lattice”); page 7 (“accumulating isotopic hydrogen atoms in the metal lattice”); page 7 (“compression of isotopic hydrogen atoms in the metal lattice”); page 16 (“absorption of isotopic hydrogen atoms in the metal lattice”); and page 19 (“with isotopic hydrogen atoms charging a metal lattice”).

The Examiner pointed to isolated disclosures of Pon et al. in an attempt to support this ground of rejection. In particular, the Examiner has pointed to the following passages: page 20 (second full paragraph); page 24 (first full paragraph); page 25 (second full paragraph); page 28 (first full paragraph); and page 39 (bottom half).

It is axiomatic that in interpreting an alleged prior art document, it is impermissible to pick and choose from any one reference only so much of it as will support a given position to the exclusion of other parts necessary to the full appreciation of what such reference fairly suggests to one skilled in the art. *Bausch & Lomb, Inc. v. Barnes-Hind/Hydrocurve, Inc.*, 796 F.2d 443, 448, 230 USPQ 416 (Fed. Cir. 1986), *cert. denied*, 484 U.S. 823 (1987) (quoting *In re Wesslau*, 353 F.2d 238, 241 (CCPA 1965)). Applicant respectfully submits that the Examiner has violated this tenet of patent law in selectively excerpting partial passages from Pons et al. without placing these excerpts within the context of the document as a whole.

With regard to page 20, the recitation of the word “nuclei” does not establish that Pons et al. teach storing plasma in a solid lattice. Instead, a fair and reasonable reading of page 20 denotes that Pons et al. are characterizing types of hydrogen atoms based on nucleic characteristics. The cited paragraph of page 20, when taken in the context of surrounding paragraphs, clearly is referring to sources of “isotopic hydrogen atoms,” not their ionic counterparts. With regard to page 24, the cited paragraph clearly states that the compression of isotopic hydrogen in the metallic lattice carries along the compression of the nuclei of atoms to produce nuclear fusion. With regard to pages 25, 28, and 38, Applicant respectfully maintains that these disclosures are false. The hydrogen inside the lattice of Pons et al. is

mobile, but not as free nuclei. In Pons et al., the penetration of isotopic hydrogen inside the metal lattice provokes the formation of metal hydride. The Examiner has requested “factual evidence” to support Applicant’s position. In response, Applicant has submitted herewith Manchester, et al., H-Pd (Hydrogen-Palladium), Phase Diagrams of Binary Hydrogen Alloys, pp. 158 to 181. The Manchester article is one document of many in the literature that supports Applicant’s position that Pons et al. forms a metal halide, not a discrete proton.

Applicant further respectfully submits that the Examiner has inconsistently applied Pons et al. In one breath, the Examiner points to Pons et al. as discredited work. In the next breath, however, the Examiner defends the disclosure of Pons et al., and in particular the disclosures of nuclei at pages 25, 28, and 38, as correct and beyond challenge.

In the event the Examiner maintains this ground of rejection, Applicant respectfully requests that the Examiner provide support to rebut the teachings of the Manchester article, and that the Examiner rectify his inconsistent use of Pons et al.

**Third**, the Examiner alleges that the original disclosure does not teach how to maintain the plasma in a stable form.

Applicant argues on page 24 of the 8/28/03 response that in his case the nucleic are free to move inside the lattice (cathode) and because they are free to move, they can move within a very close distance (which distance however, is undefined) of each other and this allows the formation of a stable plasma inside the lattice (however, without any reputable factual evidence in support thereof, these statements by applicant are no more than unfounded speculation and assumptions).

Note in regard to this issue of a “stable plasma” that the examiner had already held applicants [*sic*] disclosure insufficient as to how and in what manner, the “plasma” can be considered “stable” and, be maintained in “stable” form for several hours without significant difficulty, as stated on page 2 lines 9+ of applicants [*sic*] specification.

Applicant respectfully disagrees. When the cathode is placed in an acidic solution ( $\text{pH} < 1$ ), the number of protons entering the layer directly under the surface is greater than the number of protons necessary for the electrochemical mechanism of hydrogen. The energy created as a result of the production of  $\text{H}_2$  induce chaotic vibrations of the atoms of the layer.

These vibrations communicate enough kinetic energy to the excess H D T<sup>+</sup> particles that the particles remain under the form of plasma inside the layer. A power source (such as 103 in the drawings) optionally may be applied to prolong the state of vibration. See page 29, last paragraph of specification.

**Fourth**, the Examiner alleges that Applicant's assertions (as presented in written communications on August 28, 2003) are inconsistent with the specification:

It is noted that applicant is still arguing that it is critical for the formation of isotopic hydrogen in the form of nuclei (plasma) inside the cathode, for the pH of the electrolyte solution to be less than one. However, as previously pointed out to applicant (see for example, page 4 of the 2/24/03 Office action), this argument is not supported by applicants [sic] own specification!

Applicant has presented no valid reasons why one should now, after the actual filing of this application by applicant in the Office, ignore or disregard or pretend as non-existent, certain portions of applicants [sic] specification.

Applicant disagrees. As explained above, the accumulation of plasma (H<sup>+</sup> +e<sup>-</sup> -> plasma) inside the lattice of a metal solid has been explained in reference to factual evidence illustrated in Figure 5a, which illustrates a slope of current density versus potential of nil. Figure 5a itself teaches that the nil slope, and hence the accumulation of plasma, does not occur at pH values greater than 1. The specification also contains direct and unambiguous teachings. Page 10, line 35 to page 11, line 1 states that this phenomenon occurs at pH < 1. See also page 21, lines 4-7, which prescribe using "acid solutions of pH < 1."

Applicant respectfully submits that it is the Examiner, not Applicant, who is ignoring or disregarding certain portions of Applicant's specification and who has taken disclosures out of context. The Examiner has pointed out that on page 4 of the specification, it is very broadly stated that the electrolyte in the electrolytic bath of Figure 1 is an ionic solution with an acid or basic pH. In general, electrolytic baths are generally known in the art and commonly have acidic or basic electrolytic solutions. The mention of "acidic and basic pH" is used simply to assist in the identification of the electrolytic solution in Fig. 1. Nowhere does the subject



application state that basic solutions may be successfully practiced in the inventive method or apparatus. In fact, the rest of the specification describes how a basic solution is not desirable for creating plasma. The specification repeatedly teaches the use of acidic solutions have a pH less than 1 to generate the plasma. The specification should be read as a whole, not split into isolated passages.

The Examiner's assertion that "[t]he specification on page 9 line 22 refers to the creation of plasma in a solid in prior art experiments wherein the pH ranged from 0.4 – 1.8!" exemplifies the Examiner's misunderstanding of the invention and the factual evidence set forth in the specification. The specification does not refer to "the creation of plasma in a solid" wherein the pH ranged from 0.4 – 1.8. Instead, what the specification refers to this range in connection with prior experiments of Clamroth and Knorr, and Schuldiner and Hoare:

In acid solution, the behavior of the palladium cathode is very peculiar, as shown by the experiment of Clamroth and Knorr [1], and Schuldiner and Hoare [2]. These experiments are summarized on curves 5a and 5b, and present the potential V of the palladium in function of Log i. Figure 5a shows curves representing the pH range 0.4 - 1.8.

(Page 9, lines 22-28 of the specification)

Further, the results shown in Figure 5a and discussed in the specification have been presented to support Applicant's position that the condition of  $\text{pH} < 1$  is critical. Of all of the curves shown in Figure 5a, only the curve for the experiment where the pH has the value 0.4 displays a flat, horizontal region. In this region the potential is virtually independent of the current density. The explanation of why this slope is nil is given on page 10 of the application. When the pH is 0.4 and for the highest current densities:

The total current-density consists of two parts: the first part consists of the two first electrochemical steps (with a slope  $b = 40 \text{ mV}$ ), the second part ( $\text{H}^+ + \text{e}^- \rightarrow \text{plasma}$ ) with a slope  $b = 0 \text{ mV}$ .

For high current densities (greater than  $0.1 \text{ A/cm}^2$ ), the second part becomes greater than the first. This explains why the aggregate slope becomes nil. There is accumulation of plasma inside the cathode. But in the case of all of the other curves having a higher pH, there is no flat horizontal region. This means that the formation of plasma is negligible, which results in minimal contribution to the total current density. Thus, the transition between the preponderance of the formation of plasma and the preponderance of the electrochemical mechanism as shown on the figure 5a occurs between a pH 0.4 and a pH 0.84.

Therefore, figure 5a clearly displays the importance of the pH for pH<1 (or less than 0.84). Essentially, these higher pH curves are comparative examples that, when taken in conjunction with the curve for pH of 0.4, provide factual evidence proving the functionality of the present invention.

**Fifth**, the Examiner has pointed out that claims 5, 6, and 10-12 do not recite that the pH is less than 1. Applicant has amended these claims to include this feature.

The Examiner has also stated that the claims do not all “recite vibrating the cathode (which applicant indicates on page 12 of the 10/21/02 response as also being critical to his invention of forming a plasma). The vibrations discussed on page 12 of the October 21, 2002 response and recited in the claims refer to vibrations produced by the release of energy from molecular hydrogen formation. This kinetic energy helps disperse the atomic hydrogen in every direction, including toward the inside of the metal cathode, and pushes the molecular hydrogen outside the electrode. The remainder of the energy, coupled with the movements of the H and H<sub>2</sub> inside the layer, cause the metallic atoms to vibrate chaotically.

For all of these reasons, and for the additional reasons asserted in the previous responses, Applicant respectfully submits that the objection to the specification is misplaced, and respectfully requests reconsideration and withdrawal of the same.

***CLAIMS – 35 U.S.C. § 101***

Claims 1-12 stand rejected under 35 U.S.C. § 101, as being inoperative and therefore lacking utility. This rejection is respectfully traversed for the reasons given above and withdrawal of the same is respectfully requested.

The Examiner asserts that the subject application does not disclose features and/or parameters that enable Applicant's invention to be operative to produce plasma in the cathode, yet which are lacking in systems such as Williams et al. and Pons et al. As noted above, Applicant has described in sufficient detail in the present specification so as to allow one skilled in the art to produce plasma in the lattice of a cathode by following the instant disclosure. The feature/parameter that is allegedly lacking is the pH of less than 1. Applicant has disclosed this feature. Furthermore, Applicant has provided sufficient information so as to enable one skilled in the art to practice a suitable pH and recognize when such plasma has been created.

Accordingly, reconsideration and withdrawal of this rejection is urged.

***CLAIM REJECTIONS – 35 U.S.C. § 112, SECOND PARAGRAPH***

Claims 1-12 stand rejected under 35 U.S.C. § 112, second paragraph.

Applicant respectfully traverses this rejection. All grounds advanced by the Examiner in support of this rejection have been addressed above. Pons et al. fail to support this rejection. Further, Applicant's claims are not incomplete for reasons discussed above, and incorporated herein in the interest of brevity.

Accordingly, Applicant respectfully requests reconsideration and withdrawal of this rejection.

***CLAIM REJECTIONS – 35 U.S.C. § 102***

Claims 10-12 have been rejected under 35 USC 102 (b) as being anticipated by any of Williams et al., Pons et al., Ormorit, Kubota or Makoto.

This rejection is respectfully traversed.

Applicant notes that claims 10-12 have been amended to recite that the ionic solution has a pH less than 1.

Accordingly reconsideration and withdrawal of this rejection is respectfully urged.

Claims 5, 6, and 10-12 have been rejected under 35 USC 102 (b) as being anticipated by any of Bellanger et al., Schulten et al., Buechler, Lovelock (I) or Pavelle et al.

This rejection is respectfully traversed

Applicant notes that claims 5, 6, and 10-12 have been amended to recite that the ionic solution has a pH less than 1.

Accordingly reconsideration and withdrawal of this rejection is respectfully urged.

Claims 1-4 and 7-12 have been rejected under 35 U.S.C. § 102(b) as being anticipated by any of Jouanneau et al., Haeffner, Cedzynska et al., Williams et al., Dapperheld et al., or Astakhove et al. on the following grounds:

The references each illustrate electrochemical systems which inherently produce hydrogen. Each reference illustrates a bath that inherently has a pH less than one.

Applicant respectfully traverses this rejection.

When asserting an inherency allegation, the Examiner must provide a basis in fact and/or technical reasoning to reasonably support the determination that the allegedly inherent characteristics necessarily flows from the teachings of the prior art. *Ex parte Levy*, 17 U.S.P.Q.2d 1461 (B.P.A.I. 1990). The fact that a prior art article may inherently have the characteristics of the claimed product is not sufficient. *Ex parte Skinner*, 2 U.S.P.Q.2d 1788 (B.P.A.I. 1986). Inherency must be a necessary result and not merely a possible result. *In re Oelrich*, 212 U.S.P.Q.2d 323 (CCPA 1981); *Ex parte Keither*, 154 U.S.P.Q. 320 (P.O.B.A. 1966).

Applicant respectfully submits that the Examiner has not met this standard for establishing inherency of the claimed pH. The Examiner has not advanced any basis in fact

and/or technical reasoning to reasonably support the determination that the allegedly inherent characteristic, i.e., an ionic solution having a pH less than 1, necessarily and certainly flows from the teachings of the applied art. In this regard, Applicant points out that a pH of less than 1 is not an inherent feature of all electrolytes. Further, an electrolyte solution that produces hydrogen molecules does not necessarily and certainly have a pH of less than 1.

For these reasons alone, the Section 102(b) rejection should be withdrawn.

Applicant further respectfully submits that the applied art is deficient for the following additional reasons.

Jouanneau et al. report the use of nickel as an anode, not a cathode. Therefore, the metal in the cells is positive and attracts the anions of the ionic solution. The anodic electrochemical process provokes dissolution of the metal and production of oxygen. There is no production of hydrogen on the nickel. The hydrogen is produced in or at the surface of a cathode which has a negative potential to attract the cations  $H^+$  of the ionic solution. In these experiments, the cathode has a very large area by comparison to the surface of the anode (several hundred to one thousand times greater). The purpose of this much greater surface is to avoid the limitation of currents by the cathode. Because of the very large surface, the current density of the cathode is too small to produce plasma inside the platinum.

Haeffner's invention describes a system for the generating of a plasma of protons, deuterons or tritons by use of an electric arc inside a liquid  $D_2O$  mixed with  $H_2O$  and the generating of an electrical field for accelerating said ions towards a target containing or covered with a layer of atomic or chemically bound hydrogen isotopes. In this invention Haeffner never states or infers that plasma exists inside the metallic cathode. On the contrary, the abstract states:

The deuterons are discharged on the electrode by capturing electrons and forming atoms D and molecules  $D_2$  which are absorbed on the metal surface constituting a target for incident deuterons. The cathode and especially the surface layer will be saturated with  $D_2$ .

Haeffner provides no information of the current density or on the value of pH. Inside an acid solution and under cathodic conditions dissolution of the titanium occurs. There is no vibration of the metal cathode to maintain the protons under the form of plasma inside the cathode. As Haeffner himself stated, his invention is clearly and unquestionably meant to store hydrogen atoms and hydrogen molecules at the surface of the cathode and inside the cathode by absorption.

Cedzynska presents a method for consistently achieving a high loading ratio of isotopic hydrogen (which means hydrogen atoms or molecules). The solution is an acid solution 0.5 M  $D_2SO_4$  in  $D_2O$ . But the current densities of 10 to 50 mA/cm<sup>2</sup> used during the loading are smaller than the minimum of 100 mA necessary to begin the creation of plasma. Cedzynska allows the loading of deuterium atoms H but not the creation or storage of plasma.

Williams uses some acid solutions. The more acid electrolyte is a solution of sulfuric acid 0.1M in  $H_2O$ . In the handbook of chemistry and physics CRC Press, Inc., Boca Raton, FL, page D-146, the pH of this solution is equal to 1.2. But to create plasma, the ionic solution must have a  $pH < 1$ . Therefore, Williams never created plasma inside the cathodes used in these experiments.

Dapperheld describes an electrochemical process for the replacement of hydrogen atoms in an organic compound. This process builds a layer of organic molecules at the surface of the cathode. This layer between the metal and the ionic solution completely disrupts the electrochemical process for the production of hydrogen. A part of the atomic hydrogen created at the cathode is used for the reduction of the organic molecules, to eliminate the halogen atoms and replace them by hydrogen atoms. This pollution of the interface metal solution directs the electrochemical process to the transformation and reduction of the organic molecules. Due to the impurity of the acidic solutions, there is no possibility that plasma will be created under these conditions.

In his publication Astakhov uses a solution 1M D<sub>2</sub>SO<sub>4</sub> and a current density equal to 90 mA/cm<sup>2</sup>, which is below the minimum of 100 mA/cm<sup>2</sup> required to produce plasma. During the other experiments using D<sub>2</sub>SO<sub>4</sub> solutions, the loading phase that lasts one hundred seconds is followed by an unloading phase of one hundred seconds. During this last phase, the potential of the electrode is positive. The electrode became anode that provokes the unloading. This process (loading and unloading) can not allow the creation of plasma inside a cathode.

For these additional reasons, reconsideration and Section 102(b) rejections are respectfully requested.

***CLAIM REJECTIONS – 35 U.S.C. § 103***

Claims 1-4 and 7-12 have been rejected under 35 U.S.C. § 103(A) as being anticipated by any of Jouanneau et al., Haeffner, Cedzynska et al., Williams et al., Dapperheld et al., or Astakhove et al., and further in view of Doke et al.

Applicant has established that Jouanneau, Haeffner, Cedzynska, Williams, Dapperheld, and Astakhove are deficient for the reasons expressed above. Doke does not overcome these deficiencies. For this reason alone, the Section 103(a) rejection should be withdrawn.

Additionally, Doke describes a cylinder plating type vibrating electrode apparatus used to achieve a higher probability of nuclear fusion. The pure nickel plate is coated with palladium or titanium (nuclear fusion generating substances). A vibrating body is used to induce vibrations of the cylindrical plated cathode. The apparatus is set inside a deuterium tank (heavy water tank in the original Japanese text). The heavy water passes through a heat exchanger outside the tank to remove the heat energy created by the fusion reactions in the plating at the surface of the cathode.

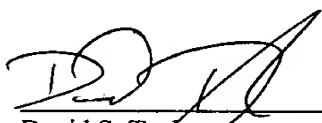
The pH in this heavy water is superior to 1. This condition prevents the creation of plasma of deuterons inside the palladium or the titanium coating at the surface of the cathode

are the HDT atoms bound to the metallic atoms of the lattice coating. The vibrations are used to induce vibrations of hydrogen atoms bound for the metallic atoms not to plasma since there is not any.

For these additional reason, the Section 103(a) rejection of claims 1-4 and 7-12 should be withdrawn.

If, after reviewing the above amendments and remarks, the Examiner believes that any issues remain unresolved, the Examiner is respectfully requested to contact the undersigned, by telephone, to schedule an interview to address such issues.

Respectfully submitted,

  
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